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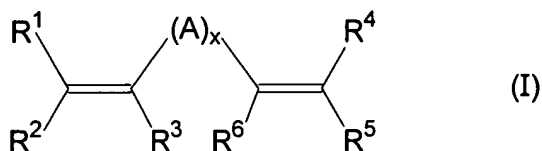
Our Ref.: G 5010 DE

Claims

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1. Process for preparing a Palladium(0) compound, comprising reaction of a palladium compound with one or more compounds of the general formula I in the presence of a base:

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in which:

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each A is independently a CR⁷R⁸-radical where one of the A radicals may be oxygen, sulphur, an NR⁹ group or an SiR¹⁰R¹¹ group, or where the A radicals may be a constituent of a 5- to 20-membered ring system,

x is an integer from 2 to 4, and

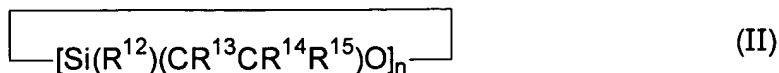
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each R¹ to R¹¹ is independently selected from R, OR, halogen, CN, NO₂, NR₂, C(O)R, C(O)OR, OC(O)R, CONR₂, NHCO₂R, NHCOR, CH=CH-CO₂R, Si(R)₃, Si(OR)₃, SiR(OR)₂, SiR₂(OR), SO₃R, SO₂R, SOR, SR, PR₂, POR₂, PO₃H, PO(OR)₂, in which R is a hydrogen atom, a substituted or unsubstituted C₁₋₁₀-alkyl radical, a substituted or unsubstituted, mono- or polyunsaturated C₁₋₁₀-alkenyl radical, or a substituted or unsubstituted, optionally heteroatom-containing C₅₋₁₀-aryl radical, and the substituents on the alkyl radical or the alkenyl

25

- radical are selected from halogen, O-C₁₋₁₀-alkyl, phenyl, O-phenyl, OH, NH₂ and halogenated C₁₋₁₀-alkyl, and the substituents on the aryl radical are selected from halogen, C₁₋₁₀-alkyl, O-C₁₋₁₀-alkyl, phenyl, O-phenyl, OH, NH₂ and halogenated C₁₋₁₀-alkyl, where R² and R³ and/or R⁵ and R⁶ together with the carbon atoms bonded thereto may be a constituent of a 5- to 7-membered, optionally heteroatom-containing ring.
- 5
2. Process according to Claim 1, wherein x is 3.
3. Process according to either of the preceding claims, wherein R¹ to R⁶ are each hydrogen atoms.
4. Process according to any of the preceding claims, wherein -(A)_x- is a group of the formula
- 15 -CH₂-X-CH₂- and -X- is selected from -O-, -S-, -SiR₂-, -NR- and -NC(O)R, and R is hydrogen, a C₁₋₄-alkyl radical or a halogenated C₁₋₄-alkyl.
5. Process according to Claim 1, wherein the compound of the general formula I is selected from
- 20 1,5-hexadiene, 1,6-heptadiene and 1,7-octadiene.
6. Process according to Claim 1, wherein the compound of the general formula I is selected from diallyl ether, diallylamine, diallylmethylamine, diallylethylamine, N-acetyldiallylamine, diallyl
- 25 sulphide, diallylsilane, diallyldimethylsilane, difurfuryl ether, difurfurylamine, bis(thiophen-2-ylmethyl)amine, difurfuryl sulphide and 1,3-divinylbenzene.
7. Process for preparing a Palladium(0) compound,
- 30 comprising reaction of a palladium compound with

one or more compounds of the general formula II in the presence of a base:



in which:

- 5 n is an integer from 3 to 20,
each R^{13} to R^{15} is independently selected from R, OR, halogen, CN, NO_2 , NR_2 , $\text{C}(\text{O})\text{R}$, $\text{C}(\text{O})\text{OR}$, $\text{OC}(\text{O})\text{R}$, CONR_2 , NHCO_2R , NHCOR , $\text{CH}=\text{CH}-\text{CO}_2\text{R}$, $\text{Si}(\text{R})_3$, $\text{Si}(\text{OR})_3$, $\text{SiR}(\text{OR})_2$, $\text{SiR}_2(\text{OR})$, SO_3R , SO_2R , SOR , SR , PR_2 , POR_2 ,
10 PO_3H , $\text{PO}(\text{OR})_2$, in which R is hydrogen, a substituted or unsubstituted C_{1-10} -alkyl radical, a substituted or unsubstituted, mono- or polyunsaturated C_{1-10} -alkenyl radical, or a substituted or unsubstituted, optionally
15 heteroatom-containing C_{5-10} -aryl radical, and the substituents on the alkyl radical or the alkenyl radical are selected from halogen, $\text{O}-\text{C}_{1-10}$ -alkyl, phenyl, O -phenyl, OH , NH_2 and halogenated C_{1-10} -alkyl, and the substituents on the aryl radical
20 are selected from halogen, C_{1-10} -alkyl, $\text{O}-\text{C}_{1-10}$ -alkyl, phenyl, O -phenyl, OH , NH_2 and halogenated C_{1-10} -alkyl, where R^{13} and R^{14} together with the carbon atoms bonded thereto may be a constituent of a 5- to 7-membered, optionally heteroatom-
25 containing ring, and
each R^{12} is independently selected from hydrogen, a hydroxyl group, a substituted or unsubstituted C_{1-10} -alkyl radical, an $-\text{O}-\text{C}_{1-10}$ -alkyl radical (where

the alkyl radical may be substituted or unsubstituted), a substituted or unsubstituted, mono- or polyunsaturated C₁₋₁₀-alkenyl radical or a substituted or unsubstituted, optionally heteroatom-containing C₅₋₁₀-aryl radical, where the substituents are as defined for R¹³ and R¹⁵.

8. Process according to Claim 7, wherein n is an integer from 3 to 6 and each R¹² is independently a C₁₋₄-alkyl radical or a halogenated C₁₋₄-alkyl radical.

9. Process for preparing a Palladium(0) compound, comprising reaction of a palladium compound with one or more compounds of the general formula III in the presence of a base:

Term-O-{[Si(R¹⁶)(CR¹⁹CR¹⁷R¹⁸)O]_v[Si(R²⁰)₂O]_w}-Term (III)

in which

v and w are each independently 0 or an integer of from 1 to 1000 and v+w is from 0 to 1000,

each R¹⁶ is independently selected from hydrogen, a hydroxyl group, a substituted or unsubstituted C₁₋₁₀-alkyl radical, an -O-C₁₋₁₀-alkyl radical (where the alkyl radical may be substituted or unsubstituted), a substituted or unsubstituted, mono- or polyunsaturated C₁₋₁₀-alkenyl radical or a substituted or unsubstituted, optionally heteroatom-containing C₅₋₁₀-aryl radical, where the substituents are as defined for R¹⁷ and R¹⁹,

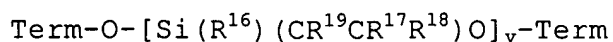
each R¹⁷ to R¹⁹ is independently selected from R, OR, halogen, CN, NO₂, NR₂, C(O)R, C(O)OR, OC(O)R,

CONR₂, NHCO₂R, NHCOR, CH=CH-CO₂R, Si(R)₃, Si(OR)₃,
SiR(OR)₂, SiR₂(OR), SO₃R, SO₂R, SOR, SR, PR₂, POR₂,
PO₃H, PO(OR)₂, in which R is a hydrogen atom, a
substituted or unsubstituted C₁₋₁₀-alkyl radical, a
5 substituted or unsubstituted, mono- or
polyunsaturated C₁₋₁₀-alkenyl radical, or a
substituted or unsubstituted, optionally
heteroatom-containing C₅₋₁₀-aryl radical, and the
substituents on the alkyl radical or the alkenyl
10 radical are selected from halogen, O-C₁₋₁₀-alkyl,
phenyl, O-phenyl, OH, NH₂ and halogenated C₁₋₁₀-
alkyl, and the substituents on the aryl radical
are selected from halogen, C₁₋₁₀-alkyl, O-C₁₋₁₀-
alkyl, phenyl, O-phenyl, OH, NH₂ and halogenated
15 C₁₋₁₀-alkyl, where R¹⁷ and R¹⁹ together with the
carbon atoms bonded thereto may be a constituent
of a 5- to 7-membered, optionally heteroatom-
containing ring,

each R²⁰ is independently selected from hydrogen, a
20 hydroxyl group, a substituted or unsubstituted
C₁₋₁₀-alkyl radical, an -O-C₁₋₁₀-alkyl radical (where
the alkyl radical may be substituted or
unsubstituted), a substituted or unsubstituted,
mono- or polyunsaturated C₁₋₁₀-alkenyl radical, or
25 a substituted or unsubstituted, optionally
heteroatom-containing C₅₋₁₀-aryl radical, where the
substituents are as defined for R¹⁷ and R¹⁹, and

each Term is independently (R¹⁶)₂(CR¹⁷R¹⁸CR¹⁹)Si- or
(R¹⁶)₃Si-.

30 10. Process according to Claim 9, wherein the compound
of the general formula (III) has the general
formula:



where R^{16} to R^{19} , Term and v are each as defined in Claim 9.

11. Process according to any of Claims 7 to 10,
5 wherein the compound of the general formula II or III is selected from divinylidisiloxane, 1,1,3,3-tetramethyl-1,3-divinylidisiloxane, 1,1,3,3-tetramethyl-1,3-dithien-2-ylidisiloxane, 1,1,3,3-tetramethoxy-1,3-divinylidisiloxane, 1,3-dimethyl-1,3-divinylidisiloxanediol, 1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasiloxane and 1,3,5-trimethyl-1,3,5-trivinylcyclotrisiloxane.
10
12. Process according to any of Claims 7 to 10,
wherein the compound of the general formula II or
15 III is selected from 1,1,3,3-tetramethyl-1,3-divinylidisiloxane, 1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasiloxane and 1,3,5-trimethyl-1,3,5-trivinylcyclotrisiloxane.
13. Process according to any of the preceding claims,
20 wherein the palladium compound is selected from PdX_2 , PdX_4 , M_2PdX_4 , M_2PdX_6 , $(\text{NH}_3)_2\text{PdX}_2$ and $[\text{Pd}(\text{NH}_3)_4]\text{X}_2$, where M is a hydrogen atom, an alkali metal or $\text{NR}^*_4^+$ ($\text{R}^* = \text{hydrogen, C}_{1-4}\text{-alkyl}$) and X is a halogen or NO_3^- .
- 25 14. Process according to Claim 13, wherein X is chlorine.
15. Process according to any of the preceding claims, wherein the reaction is effected in the presence of a solvent or solvent mixture.

16. Process according to Claim 15, wherein the solvent is selected from water, C₁₋₆-alcohols and C₂₋₆-ethers and mixtures thereof.
17. Process according to any of the preceding claims,
5 wherein the base is selected from alkali metal salts, alkaline earth metal salts and ammonium salts (ammonium as NR₄⁺ where R = H or C₁₋₄-alkyl) of carbonates, hydrogencarbonates and hydroxides.
18. Process according to any of the preceding claims,
10 also comprising a purification step.
19. Process according to any of the preceding claims, also comprising a concentration step.
20. Process according to any of the preceding claims,
15 wherein the reaction of the palladium compound with one or more compounds of the general formula I, II or III is carried out in the presence of one or more ligands other than the compound of the general formula I, II or III.
21. Process according to any of the preceding claims,
20 further comprising the reaction of the palladium compound with one or more ligands other than the compound of the general formula I, II or III.
22. Palladium(0) compound obtainable by a process according to Claim 1, wherein the compound of the
25 general formula I is hexadiene or octadiene.
23. Palladium(0) compound obtainable by a process according to Claim 9, wherein the compound of the general formula III is 1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasiloxane.